

A NEW NARCOTIC SNUFF FROM THE NORTHWEST AMAZON

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I.

AN interesting new drug has been added to our growing list of native narcotic and stimulant plants of South America. Recent investigations have uncovered the use amongst certain Indians of eastern Colombia and north-western Brazil of several species of the myristicaceous genus *Virola* in the preparation of a violently toxic snuff which is employed by the medicine-men in witchcraft, divination and the diagnosis of illness.

II.

During the course of exploration of the Río Apaporis in Amazonian Colombia in 1951 and 1952, I had as helpers several Indians of the Puinave tribe from the little known Río Inirida. The Inirida is the highest Colombian affluent of the Orinoco and, although botanically completely unknown, it represents apparently an area where the Amazon (Río Negro-Vaupés) and Orinoco floras blend. Consequently, my Puinave helpers, from whom I first learned of this myristicaceous snuff, were familiar with many of the plants encountered in the Apaporis basin.

During 1951, the uninhabited Río Apaporis was opened up for tapping wild rubber, and natives from

various tribes of the Colombian Comisaría del Vaupés and the Rio Uaupés of Brazil were transported into the area by air. Thus, I had an unparalleled opportunity of investigating the preparation of the narcotic by natives of tribes isolated from one another by long distances. To the present, the investigation has disclosed the use of the snuff in Colombia amongst the Puinaves of the Río Inirida, the Kuripakos of the Río Guainía, the Kubeos of the Río Vaupés and its Colombian affluents, the Tukanos of the Ríos Vaupés and Papurí, the Barasanas and Makunas of the Rio Piraparaná and the Taiwanos of the Río Kananarí. In Brazil, its use is known amongst the Tukanos of the Rio Uaupés, and there is some indirect evidence that the several tribes of the Rio Issana likewise employ it.

The narcotic snuff prepared from species of *Virola* is called *yá-kee* in Puinave and *yá-to* in Kuripako; the Tukanos call it *pa-ree-ká*, which is a loan word from the Nheêngatú or Lingoa Geral *paricá*, the term by which the snuff is known in the Rio Negro-Uaupés area of Brazil.

The species of *Virola* employed in preparing the narcotic snuff have been verified as the following:¹

1. ***Virola calophylla*** Warburg Nova Acta Acad. Leop.-Carol. 68 (1897) 231.

Myristica calophylla Spruce Journ. Linn. Soc. 5 (1860) 4, *nomen nudum*.

Virola incolor Warburg *loc. cit.* 232.

Otoba incolor Karsten ex Warburg *loc. cit.* 232, *in synonym*.

This species is known from Amazonian Brazil and adjacent parts of Colombia, Peru and Venezuela. Prior to the collection of the material cited below, the species was known in Colombia only from Villavicencio. Subsequent

¹ I acknowledge gratefully the verification of my identifications by Dr. A. C. Smith of the Smithsonian Institution.

collections and observations have shown it to be rather common in Amazonian Colombia. The type (*Spruce 3207*) was collected a century ago by Spruce along the Casiquiare in Venezuela.

The following collections of *Virola calophylla* are those upon which the identification of one source of the narcotic snuff was made.

COLOMBIA: Comisaría del Amazonas, Río Apaporis, Soratama, entre el Río Pacoa y el Río Kananarí. Alt. about 250 m. "Small tree about 35 feet tall; diameter 8-9 inches. Bark exudes inside a reddish resin when ripped off tree. Externally reddish brown, pebbled. Puinave = *yá-kee*. Source of narcotic snuff. In flood-forest." June 26, 1951, *Richard Evans Schultes & Isidoro Cabrera 12855*.—Same locality. "Large columnar tree. Source of *yá-kee* snuff. Flood-forest." August 16, 1951, *Schultes & Cabrera 13587*.

2. *Virola calophylloidea* Markgraf Repert. Sp. Nov. 19 (1923) 24.

Virola lepidota A. C. Smith in Brittonia 2 (1936) 152.

This species, the type of which was collected in Manáos by Ule (*Ule 8846*) half a century ago, is rare in Amazonian Brazil in the Rio Negro and Rio Madeira valleys. Hitherto, it has not been known from Colombia, where it appears to be much less common than *Virola calophylla* in the Amazonian regions.

The following collection of *Virola calophylloidea* is that upon which the identification of the second source of the narcotic snuff was made.

COLOMBIA: Comisaría del Amazonas, Río Apaporis, Soratama, entre el Río Pacoa y el Río Kananarí. Altitude about 250 m. "Small tree along flood-bank. Flowers brownish. Puinave name = *yá-kee*. Source of narcotic snuff." July 3, 1951, *Richard Evans Schultes & Isidoro Cabrera 12872*.

3. *Virola* spp.

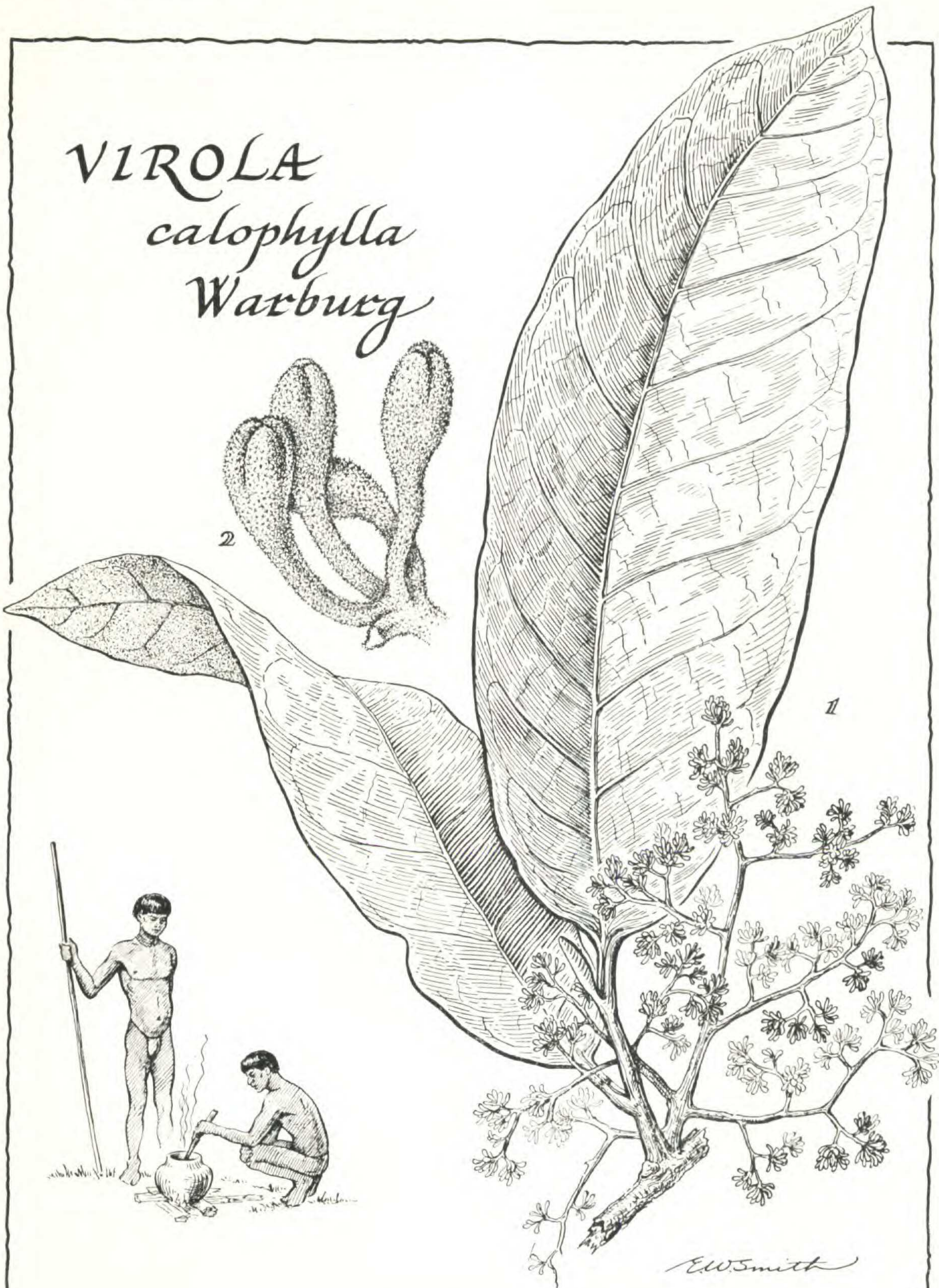
The possibility that other species of *Virola* are used in this way must not be overlooked. The Tawaino Indians of the Río Kananarí in Amazonian Colombia pointed out

EXPLANATION OF THE ILLUSTRATION

PLATE XXXIX. *VIROLA CALOPHYLLA Warburg.* 1, habit, approximately one half natural size. 2, flowers, approximately ten times natural size.

Drawn by ELMER W. SMITH

VIROLA
calophylla
Warburg



E.W. Smith

EXPLANATION OF THE ILLUSTRATION

PLATE XL. *VIROLA CALOPHYLLOIDEA Markgraf.* 1, habit, approximately one half natural size. 2, flowers, approximately ten times natural size.

Drawn by ELMER W. SMITH

VIROLA
calophyllloidea
Markgraf



a tree of this genus as representing their source of *paricá*, but there seemed to be some disagreement amongst the several informers. A sterile collection from the tree has been determined with reservation by Dr. A. C. Smith as *Virola elongata* (Benth.) Warburg.

COLOMBIA: Comisaría del Vaupés, Río Kananarí, at base of Cerro Isibukuri, August 4, 1951, *Richard Evans Schultes & Isidoro Cabrera 13278*.

III.

What seems almost certainly to have been this unusual narcotic *Virola*-snuff was apparently first noticed and reported by the famous German ethnologist, Theodor Koch-Grünberg, who explored the northwest Amazon and adjacent areas in the upper Orinoco basin in the early part of this century. The botanical source of the snuff, however, was not ascertained. Writing of the Yekwaná (Yecuaná) tribe of the Río Ventuari in Venezuela, Koch-Grünberg (Koch-Grünberg: "Von Roraima zum Orinoco, Ergebnisse einer Reise in Nord-Brasilien und Venezuela in den Jahren 1911-13" 3 (1923) 386) reported the following concerning this narcotic:

Of an especial magical importance are the cures during which the witch-doctor inhales *hakúduf^{ha}*. This is a magical snuff used exclusively by the witch-doctors and prepared from the bark of a certain tree which, pounded up, is boiled in a small earthenware pot until all the water has evaporated and a sediment remains at the bottom of the pot. This sediment is toasted in the pot over a slight fire and is then finely powdered with the blade of a knife. Then the sorcerer blows a little of the powder through a reed (*kuratá*) into the air. Next he snuffs, whilst, with the same reed, he absorbs the powder into each nostril successively. The *hakúduf^{ha}* obviously has a strongly stimulating effect, for immediately the witch-doctor begins singing and yelling wildly, all the while pitching the upper part of his body backwards and forwards.

Dr. Adolpho Ducke, profound student of the Amazon flora for more than half a century, has attributed the *paricá* of the upper Rio Negro basin to the leaves of a

species of *Virola*. In a footnote to a discussion of *Piptadenia peregrina* L. he wrote (Ducke, A.: “As leguminosas da Amazônia brasileira” (1939) 41):

Martius and other writers attribute to this species the source of the narcotic *paricá* employed by certain Amazonian Indians (the powder of the crushed seeds is inhaled through the nostrils). Notwithstanding, according to information which I obtained from the natives themselves in two localities in the upper Rio Negro, the *paricá*-powder comes from leaves of species of *Virola* of the *Myristicaceae*.

So far as I have been able to ascertain, this is the first and only reference in the literature to the use of *Virola* in the preparation of a narcotic snuff. I have been unable to substantiate the statement that the leaves are ever used; all of the many reports which I have gathered are in agreement and indicate that the bark is the portion of the plant employed in the preparation of the snuff. Ducke fails to make mention of the identification of *paricá* as *Virola* in the second edition of his “As leguminosas da Amazônia brasileira” (Bol. Técn. Inst. Agron. Norte 18 (1949)).

IV.

It would seem that *Virola* has not hitherto been reported as possessing strong narcotic properties. Nevertheless, extremely toxic and narcotic principles have been found in other members of the *Myristicaceae*. Perhaps the best known case is *Myristica fragrans* Houtt., which “unites to the medicinal properties of the ordinary aromatics considerable narcotic properties”; fatal and near-fatal consequences have attended its careless use in India (Wood, H. C., J. P. Remington and S. P. Sadtler: “The Dispensatory of the United States of America” ed. 18 (1899) 889). This thoroughly studied plant is the source of two spices of commerce: nutmeg and mace—the former derived from the dried, ripe seed without its seed coat and arillode, the latter from the dried arillode. Both

spices are employed medicinally as stimulants and carminatives, but in excessive doses they can produce mydriasis and stupor (Youngken, H. W.: "Textbook of pharmacognosy" ed. 5 (1943) 305 ff), and mace has been known to cause "alarming sensorial disturbances" (Watson, G. C. in Prov. Med. Surg. Journ. (Jan. 26, 1848)). The toxic effects of *Myristica fragrans* are due apparently to a volatile oil, myristicine, which can act as a narcotic and which can cause a fatty degeneration of the liver (Finnemore, H.: "The essential oils" (1926) 274; Guenther, E.: "The essential oils" 5 (1952) 78). According to Youngken (*loc. cit.*), nutmeg contains up to 40% of a fixed oil and up to 10% of a volatile oil (4% of which is the narcotic principle myristicine). The whole family *Myristicaceae* is characterized by the presence of cells which contain a semi-fluid or crystalline oil, the color of which varies from yellow to red or even to a brownish black (Kraemer, H.: "Scientific and applied pharmacognosy" (1915) 250). It would appear probable, then, that the violent narcotic properties of *yákee*-snuff may be due, in great part if not entirely, to myristicine. Pharmacological studies which are at present under way will, it is hoped, clarify this interesting problem.

In the Indian Archipelago and New Guinea, other species of *Myristica* yield nutmeg, but there seems to be no record of the purposeful use of this genus amongst native Asiatic peoples as the source of a narcotic.

V.

The preparation of *yákee*-snuff² is relatively simple. I have observed the process several times with Puinave Indians and have also seen the powder prepared by Tu-

² Because of the confusion which has grown up around the widely used term *paricá*, which will be discussed fully below, I prefer to employ the short, easily-pronounced and specific Puinave Indian name for the *Virola*-snuff.

kano and Kuripako Indians. In all cases, the fabrication was essentially the same and corresponds closely to Koch-Grünberg's brief description of its manufacture amongst the Yekwanás. Descriptions of the preparation as given to me by several Kubeo, Barasana and Makuna Indians indicate that no appreciable difference marks the process as practised by these tribes. In all instances, the same species were pointed out as sources of the snuff. We are, therefore, justified, I believe, in assuming that, in the area of its distribution in the Comisaría del Vaupés of eastern Colombia, as well as in the upper Rio Negro of Brazil, the preparation of *yákee* is well standardized. In this respect, it resembles coca (*Erythroxylum Coca* Lam.), the fabrication of which is, for practical purposes, the same throughout the area; on the other hand, it is unlike the famed narcotic *caapi* or *yajé* (*Banisteriopsis* spp.), the preparation of which seems to vary with almost each tribe.

The Indians usually strip the bark from the trees during the early hours of the morning, before the sun has begun to penetrate the forest canopy to heat up the trunk. Large strips of the bark, which peel easily from the cambium, are torn from the trunk and tied into loose bundles. Almost immediately upon separation of the bark from the tree, a profuse exudation or "bleeding" of a thick reddish resin-like liquid, which soon becomes viscous, oozes forth from the inner surface of the bark in small drops. The active principle is contained in this exudation—called *oom* (latex), or, specifically referring to these species of *Virola*, *há-oom-tee-ět* or *yá-kee-oom*, in Puinave. According to the Indians, this exudation is greatly reduced in quantity and is weaker in its narcotic effects when the trunk of the *Virola* tree has received the warmth of the sun's rays.

The bundles of bark are brought in and placed in water

for about half an hour. They are then taken out, and the soft inner layer, on the surface of which the red exudation has congealed, is rasped off with a knife or machete. The shavings or raspings (*yá-kee-taa* in Puinave) are thrown into an earthen pot or enamel tray, and the rest of the bark is discarded. When enough shavings have been accumulated, a small amount of water is added, and the mass is thoroughly kneaded and squeezed. The water becomes muddy and assumes a brownish or tan hue. This turbid liquid is strained several times, usually through a piece of finely hammered bark-cloth (prepared from a species of *Olmedia*) into a small-mouthed earthenware pot. The residual shavings, when as much of the water has been expressed as possible, are thrown away. Enough water is added to the strained liquid to fill the pot, which is then set to simmer over a slow fire. From time to time, a sordid foam, which rises to the surface, must be scraped off with a piece of bark. The boiling is allowed to continue for three or four hours, more water being added if evaporation be too rapid, until nothing remains except a thick, dark brown syrup at the bottom of the pot. This syrup must not be dried rapidly over a fire; the pot is set in the sun, and the syrup is permitted to solidify slowly. When nothing but a dry, brown crust is left, the residue is scraped free from the pot and is ground into a fine powder with a water-smoothed stone as a pestle and the pot or an enamelware tray as a mortar. It is then ready to be mixed with ashes which have been made, the while, from the bark of a small wild cacao tree (*Theobroma subincanum* Mart.). Usually equal amounts by volume of ashes and *yákee*-powder are used. When they are thoroughly mixed, the product is put into a small bag made of finely hammered bark (*Olmedia* sp.) or cloth and is sifted through the bag by means of a gentle beating against the side of a small-mouthed

receptacle. The resulting dust is the final snuff. It is kept either in a small glass bottle, tightly corked, or else, more traditionally, in a type of jar made, as Koch-Grünberg described, from a large snail-shell to which a hollow bird-bone tube has been fixed with pitch. This tube is stopped with a plug of feathers glued together with pitch at the basal end to form a tight-fitting stopper.

The consumption of *yakee*-snuff is limited to medicine-men and is, therefore, small. Since it is said to lose its intoxicating properties rather rapidly, even when in a tight container, it is made in small amounts and frequently.

VI.

It may be of interest to append a few observations which I was able to make personally after taking *yakee*-snuff. I took about one-third of a level teaspoonful of the drug in two inhalations using the characteristic V-shaped bird-bone apparatus by means of which the natives blow the powder into the nostrils. This represents about one-quarter the dose usually absorbed by a diagnosing medicine-man, who takes about one slightly heaped teaspoonful in two or three inhalations at close intervals (of approximately fifteen or twenty minutes).

The dose was snuffed at five o'clock one afternoon. Within fifteen minutes a drawing sensation over the eyes was felt, followed very shortly by a strong tingling in the fingers and toes. The drawing sensation in the forehead rapidly gave way to a strong and constant headache. Within one half hour, there was a numbness of the feet and hands and an almost complete disappearance of sensitivity of the finger-tips; walking was possible with difficulty, as in a case of beri-beri. Nausea was felt until about eight o'clock, accompanied by a general feeling of lassitude and uneasiness. Shortly after eight, I lay down in my hammock, overcome with a heavy drowsiness

which, however, seemed to be accompanied by a muscular excitation, except in the extremities of the hands and feet. At about nine-thirty, probably, I fell into a fitful sleep which continued, with frequent awakenings, until morning. The strong headache over the eyes lasted until noon. A profuse and uncomfortable sweating, especially of the armpits, and what might have been a slight fever lasted from about six o'clock all through the night. There was a strong dilation of the pupils during the first few hours of the experiment. No food was taken and no tobacco was smoked from the time the experiment began until one o'clock in the afternoon—that is, for twenty hours during the course of the experiment.

Since this experiment was performed under primitive conditions in the jungle, all observations had to be made by myself. In spite of its many and serious shortcomings, the experiment indicates the narcotic strength of the snuff.

The dose employed by the medicine-men is sufficient to put them into a deep but disturbed sleep, during which delirious mumblings or, sometimes, shouts are emitted; visual hallucinations or dreams are reported to accompany the narcotic sleep very often. These are “interpreted” by an assistant who awaits the prophetic or divinatory sounds. Some medicine-men, it is said, are affected more violently than others and uncontrollable twitching of the fingers and facial muscles and a popping of the eyes are not infrequent symptoms. There is one report of the death, about twenty years ago, of a Puinave medicine-man on the Inirida River, whilst he was under the influence of *yákee*. Some *payés* (witch-doctors) are said to take *yákee* as frequently as four or five times a month; usually, so far as I have been able to ascertain, one doctor will not undergo the diagnosis-narcosis with *Virola*-snuff more than once a month. All reports would seem to indicate that it is a dangerous narcotic.

VII.

The use of a snuff commonly called *paricá* has been known for a century or more, and the source of the narcotic has quite generally been attributed to the leguminous tree *Piptadenia peregrina*. This tree has long been recognized as the source of a violently narcotic snuff which is employed by the natives of the Caribbean area and of northern South America, including the basin of the Río Orinoco, and which is widely called *yopo* or *niopo*. Humboldt's account of this snuff (Humboldt: "Voyages aux régions équinoxiales du nouveau continent. . ." 2 (1819) 260) referred to the preparation and utilization of the drug which he had observed in 1802 amongst the Otomaco and Guahibo Indians of the Orinoco in Venezuela and Colombia: "Ex seminibus tritis calci vivae admixtis fit tabacum nobile quo Indi Otomacos et Guajibos utuntur." The plant used was identified as *Acacia Niopo*, now considered a synonym of *Piptadenia peregrina*.

Sir Robert Schomburgk, who first explored British Guiana from 1835 to 1839, referred the narcotic *paricá* or *paricaraná* to *Mimosa acacioides* Benth. (Schomburgk: "Travels in British Guiana" [transl. W. E. Roth] 1 (1922) 92). This binomial is a synonym of *Piptadenia peregrina*.

In June 1854, during his botanical explorations in the vicinity of the cataracts of the Río Orinoco at Maipures, Richard Spruce came upon a wandering group of Guahibo Indians from the Río Meta in Colombia preparing *yopo*-snuff. He described the preparation of the narcotic and attributed it (as *P. Niopo*) to *Piptadenia peregrina* (Spruce, R. [ed. A. R. Wallace] "Notes of a botanist on the Amazon and Andes" 2 (1908) 427), and he reported the common name as *niopo* in Venezuela and *paricá* in Brazil.

Bates, who worked in the Amazon at the same time

as Spruce, reported, but without the support of botanical material, that *paricá* was prepared from a species of *Inga* (Bates, H. W.: "A naturalist on the River Amazon" 1 (1863) 331).

Carl F. P. von Martius (*Zur Ethnographie Amerika's sumal Brasiliens*" (1867) 390) stated that the Mundurukú Indians of Brazil used *paricá*, a snuff from the "seeds of *Mimosa acacioides*", having borrowed the habit from their neighbors, the Múras and Mauhés. He also (*loc. cit.* 441, 631) asserted that the Omaguas of Peru use this same snuff, and that it was well known amongst the Paravilhanas of the region north of the Rio Negro in Brazil and in British Guiana.

The German ethnologist Koch-Grünberg, who carried out very extensive investigations in the upper Rio Negro and lower Apaporis basins from 1903 to 1905, similarly attributed the *paricá* of this area to *Mimosa acacioides* (Koch-Grünberg, T.: "Zwei Jahre unter den Indianern" 1 (1909) 323). There seems to be no evidence that material for botanical determination supports his identification, which may have been advanced by Koch-Grünberg because of the extreme similarity of the snuff to the already widely known *yopo*-snuff. Koch-Grünberg reported:

It is a grey snuff with strong narcotic properties, known in Lingoa Geral as *paricá* and prepared from the dried seeds of a species of *Mimosa*. It is kept in small rounded calabashes or in snail-shells, the opening of which usually is closed with a piece of mirror imbedded in pitch and which, as in the case of the calabash, has a bird-bone spout fixed with pitch. . . Snuffing is done through a forked instrument made of two communicating bird-bones, which are glued together with pitch. . . In using it, a bit of the powder is poured from the snuff-box into the palm of the hand and is scooped up into the bird-bone. Then the end of one of the bones is inserted into the nostril, and the other is put into the mouth. With short blows, the fine powder is injected to the furthest membranes of the nose.

In a footnote, Koch-Grünberg (*loc. cit.*) gives a speci-

fic identification, and he makes an observation which might indicate that he had assumed that this identification must be the correct one, even though he had no botanical specimens:

Mimosa acacioides Benth. This snuff is distributed over a great part of tropical South America, from the Orinoco and the Guianas to the southern affluents of the Amazon River. Likewise, the instruments which are used in taking the snuff are very similar.

Somewhat later, Whiffen (Whiffen, T.: "The Northwest Amazonas" (1915) 143) reported that:

The Tuyuka and other tribes north of the Japurá use as a stimulant *paricá* or *niopo*, a wonderful snuff which is a strong narcotic and very similar in its effects to coca. It is made from the dried seeds of a mimosa, and like coca, is mixed with quicklime and baked clay. The seeds are roasted and then pounded in a shallow wooden mortar, and the snuff, when made, is packed in snail-shells and is inhaled through hollow bird-bones inserted in both nostrils.

It would appear that this reference of Whiffen (who never visited the Tuyuka country) to the snuff used by the tribes north of the Caquetá (Japurá) may be based upon Koch-Grünberg, for in speaking of the Andoke and Karihona tribes, he wrote (*loc. cit.*):

They all use tobacco-juice, coca, and a white snuff that I thought must be the famous *niopo* but could not find out anything about it.

My own assumption would be that this "white snuff" is actually nothing but tobacco-snuff, which is widely used in the upper Amazon area, where it is always a greyish preparation, because of the large amount of ash mixed with the pulverized tobacco. It cannot be the myristicaceous snuff, for even after the admixture of ashes, this is of a brownish color. Furthermore, the use of the *Virola*-snuff is restricted to a few practitioners and is not permitted to all members of the tribe.

Recently, Mr. Paul H. Allen, who was engaged during 1944 in botanical work in the region of the Vaupés River and its affluents, reported (Allen, P. H.: "Indians

of southeastern Colombia'' in Geogr. Rev. 37 (1947) 579) that the Kubeo Indians of the Kuduyarí River employ *paricá*. He gives as the source of *paricá* the leguminous *Piptadenia peregrina*:

The powdered seeds of *paricá* (*Piptadenia peregrina*) are blown forcefully through a bone into the nostrils of the *payé*, producing a sort of ecstasy, during which he determines the guilty party [i.e. enemies who have sent sickness through the air].

In a letter (January 14, 1952), answering my query as to his designation of the source of the snuff, Allen writes me that he did not see the seeds of *Piptadenia* himself; that he had been informed that seeds were used in the area; and that, on the basis of the literature, he concluded that these represented *Piptadenia peregrina*.

It would seem, therefore, that there is much confusion of *paricá* with *yopo*. This stems primarily from Spruce's account, for he recorded (*loc. cit.* 427):

I first gathered specimens of the *paricá* (or *niopo*) tree in 1850, near Santarém, at the junction of the Tapajóz and Amazon, where it had apparently been planted. In the following year, I gathered it on the little river Jauouarí—one of the lower tributaries of the Rio Negro—where it was certainly wild. But I did not see the snuff actually prepared from the seeds and in use until June, 1854, at the cataracts of the Orinoco.

We know that Spruce was aware of Humboldt's report of *yopo*-snuff. Upon finding the same tree in an area such as the Rio Negro where, according to local reports, the medicine-men took a snuff called *paricá*, it is possible that Spruce assumed that *Piptadenia peregrina* was also the source of the *paricá*-snuff. This is not an easy explanation to accept, for Spruce deservedly enjoys the reputation of one of the most critical and accurate of ethnobotanical students of South America. Nor are we at all certain to this date that *paricá* does *not* refer to snuff made with *Piptadenia* seeds in *some* parts of the Amazon Valley. Furthermore, we have the reports of

EXPLANATION OF THE ILLUSTRATION

PLATE XLI. Stripping bark from *VIROLA CALOPHYLLA* for the preparation of *yakee*-snuff. Río Apaporis, Comisaría del Amazonas, Colombia.

Photograph by RICHARD EVANS SCHULTES